Putting Croatia on the Map: 2001 Census Data Made Available on the Web in Graphic Form

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Outline

- Introduction (Motivation)
- Results:
  - Technical features and benefits
  - DEMO
- Conclusions
  - Limitations
  - Future Developments

Introduction

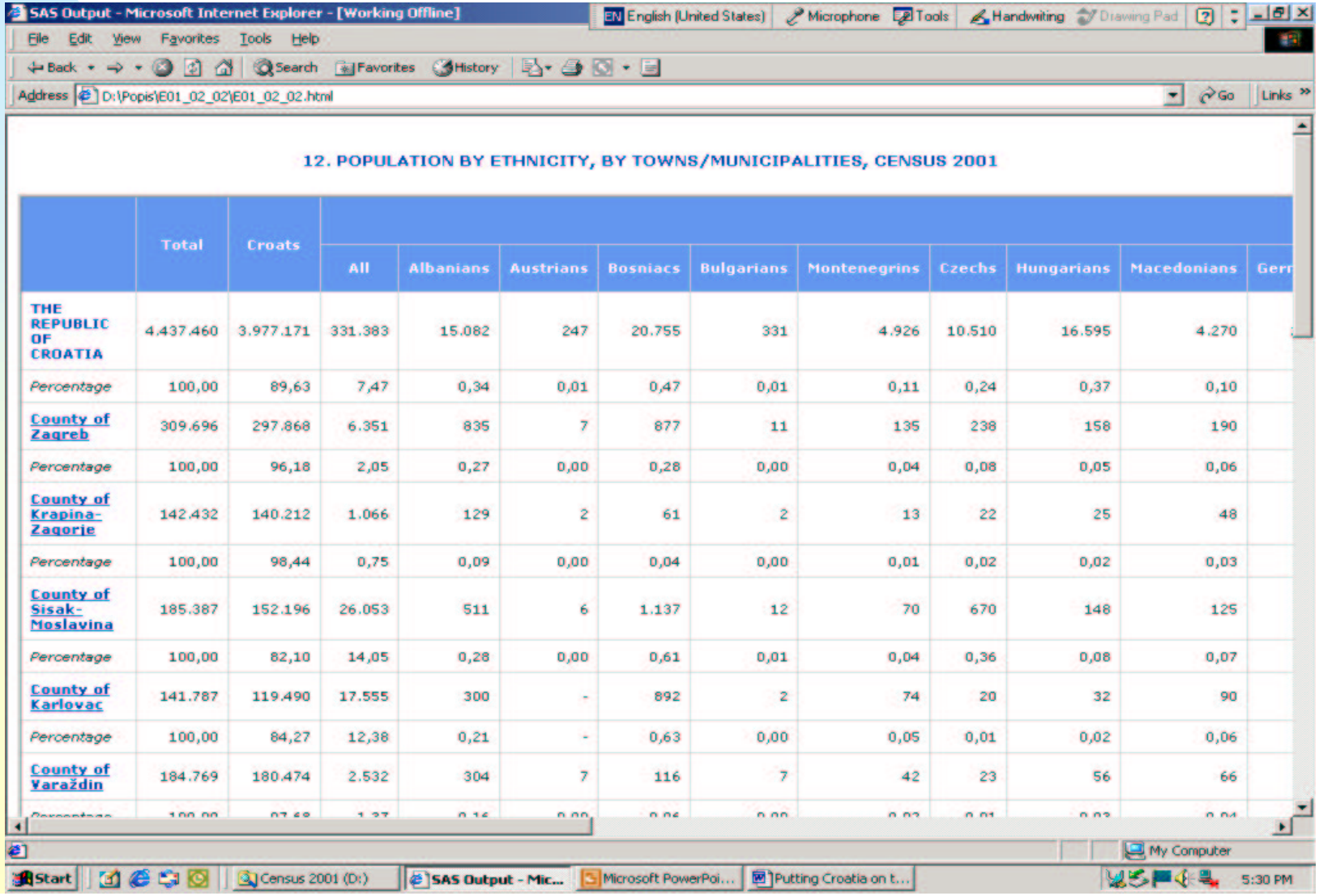
- **Aim/Goal of this research**:
  - to “digitalize” the government’s interface, so as
  - to provide faster data to the public,
  - at less expensive delivery costs of 2001 Census data.
- **Method (…or ways to improve customer satisfaction):**
  - Since graphs (visualization) are better than tables,
  - Internet is better than printouts, and
  - drill-down is better than scrolling,

  the basic strategy was to use SAS (http://www.sas.com) GRAPH with ODS to provide the Administrative Area/ Geographic Information System (AA/GIS) functionality
- **Tactic:**

  After researching typical public usage behavior, the SW was used to develop
  - a logical search
  - logical comparison,
  - logical ranking, and
  - logical presentation of the 2001 Census Data

Tables vs. Graphs

e.g., Ethnic diversity table:

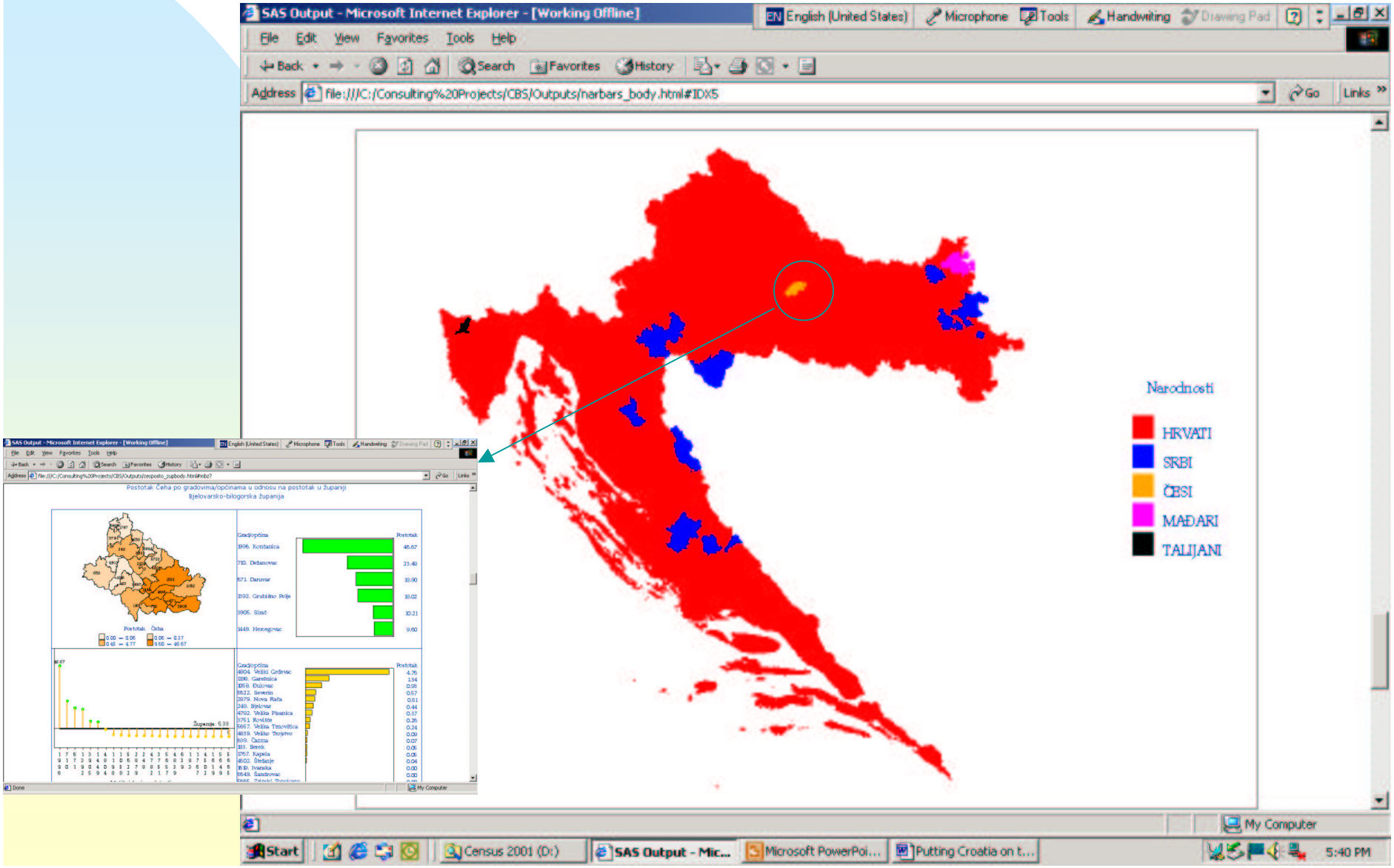


12. POPULATION BY ETHNICITY, BY TOWNS/MUNICIPALITIES, CENSUS 2001

	Total	Croats	All	Albanians	Austrians	Bosniacs	Bulgarians	Montenegrins	Czechs	Hungarians	Macedonians	Gerr
THE REPUBLIC OF CROATIA	4.437.460	3.977.171	331.383	15.082	247	20.755	331	4.926	10.510	16.595	4.270	
Percentage	100,00	89,63	7,47	0,34	0,01	0,47	0,01	0,11	0,24	0,37	0,10	
County of Zagreb	309.696	297.868	6.351	835	7	877	11	135	238	158	190	
Percentage	100,00	96,18	2,05	0,27	0,00	0,28	0,00	0,04	0,08	0,05	0,06	
County of Krapina-Zagorje	142.432	140.212	1.066	129	2	61	2	13	22	25	48	
Percentage	100,00	98,44	0,75	0,09	0,00	0,04	0,00	0,01	0,02	0,02	0,03	
County of Sisak-Moslavina	185.387	152.196	26.053	511	6	1.137	12	70	670	148	125	
Percentage	100,00	82,10	14,05	0,28	0,00	0,61	0,01	0,04	0,36	0,08	0,07	
County of Karlovac	141.787	119.490	17.555	300	-	892	2	74	20	32	90	
Percentage	100,00	84,27	12,38	0,21	-	0,63	0,00	0,05	0,01	0,02	0,06	
County of Varaždin	184.769	180.474	2.532	304	7	116	7	42	23	56	66	

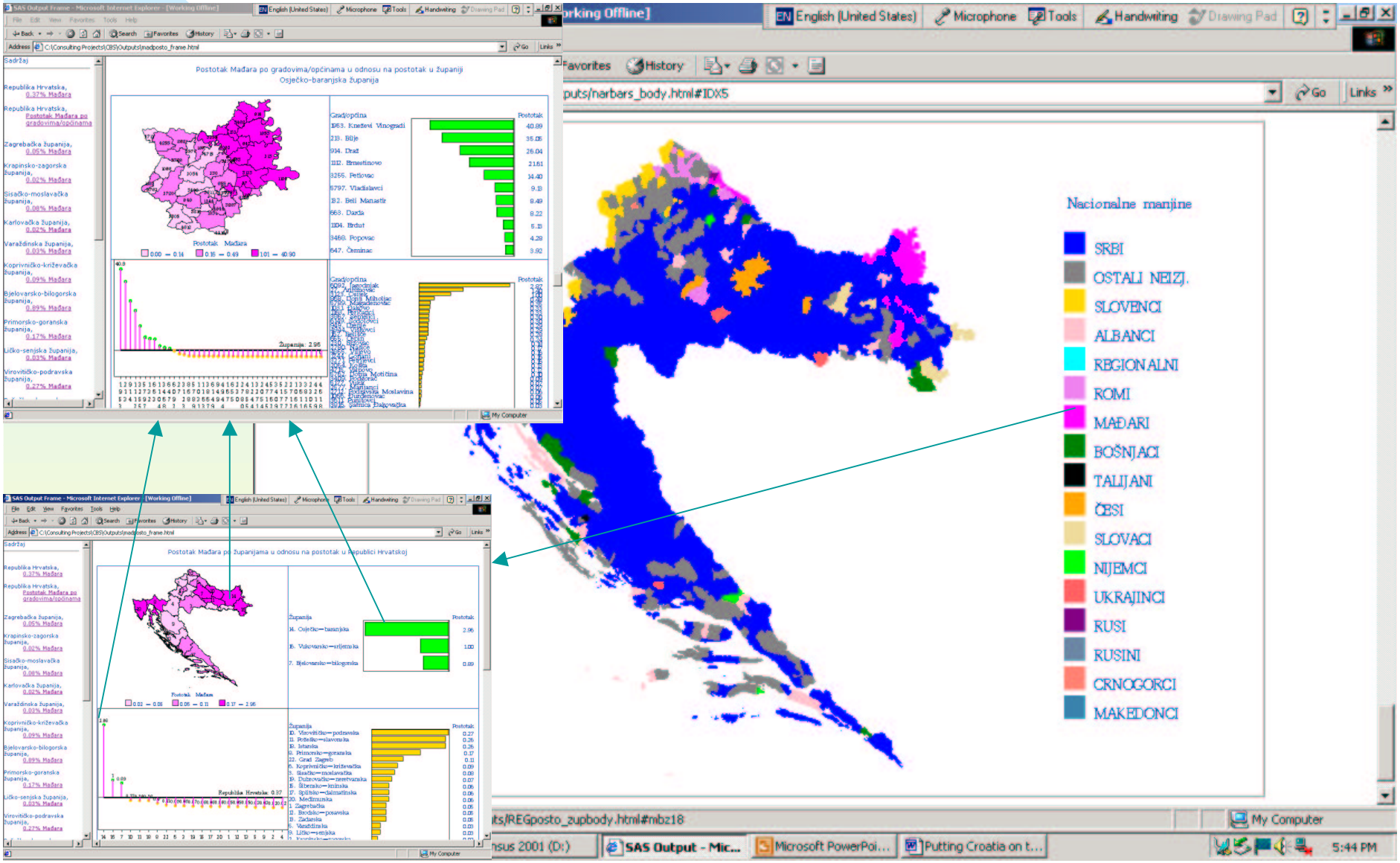
Tables vs. Graphs

Ethnic diversity map (w/ Croats):



Tables vs. Graphs

Ethnic diversity map (w/out Croats):



Results: Technical Features and Benefits of the Administrative Area GIS

- **Technical features:**
  - Developed using SAS base and GRAPH with ODS (Output Delivery System) and intensive macro programming (25+ macros)
  - New administrative borders (at the county/ municipality level) for the first time implemented and used in SAS GRAPH maps (based on coordinate data provided by Croatian Geodesic Institute)
  - 16 consult. days (design + development)
  - 1114 files (html [frame, content, body], gif)
  - 4000+ graphs (maps, bars, pies, pin charts, “pyramids”)
  - multiple links
  - No additional intervention in HTML code (generated by SAS ODS) was necessary
  - Full national language support (čžš) available

Results: Technical Features and Benefits of the Administrative Area GIS

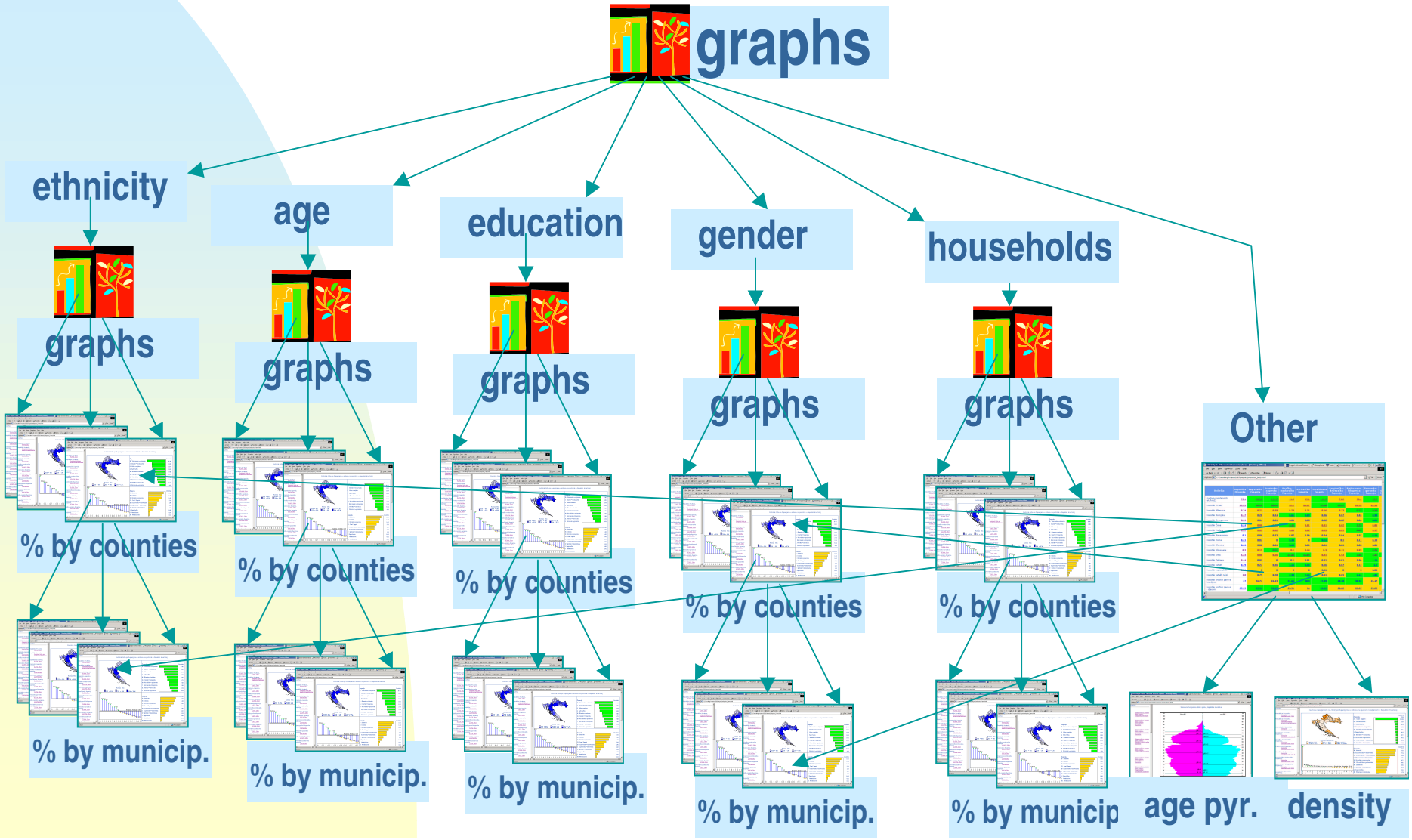
- **Benefits:**
  - Global view of demographic data (e.g., “diversity maps” for immediate insight)
  - Easy comparison, ranking, and identification of percentages (e.g., % illiterate) by geographic region (counties, municipalities), by name, or by rank (using “4 graphs views”)
  - Logical “drill-down” by geographic dimension (from counties to municipalities)
  - Individual graphs (maps, bars, pies, pin-charts, “age pyramids”) are readily available for download

Results: DEMO

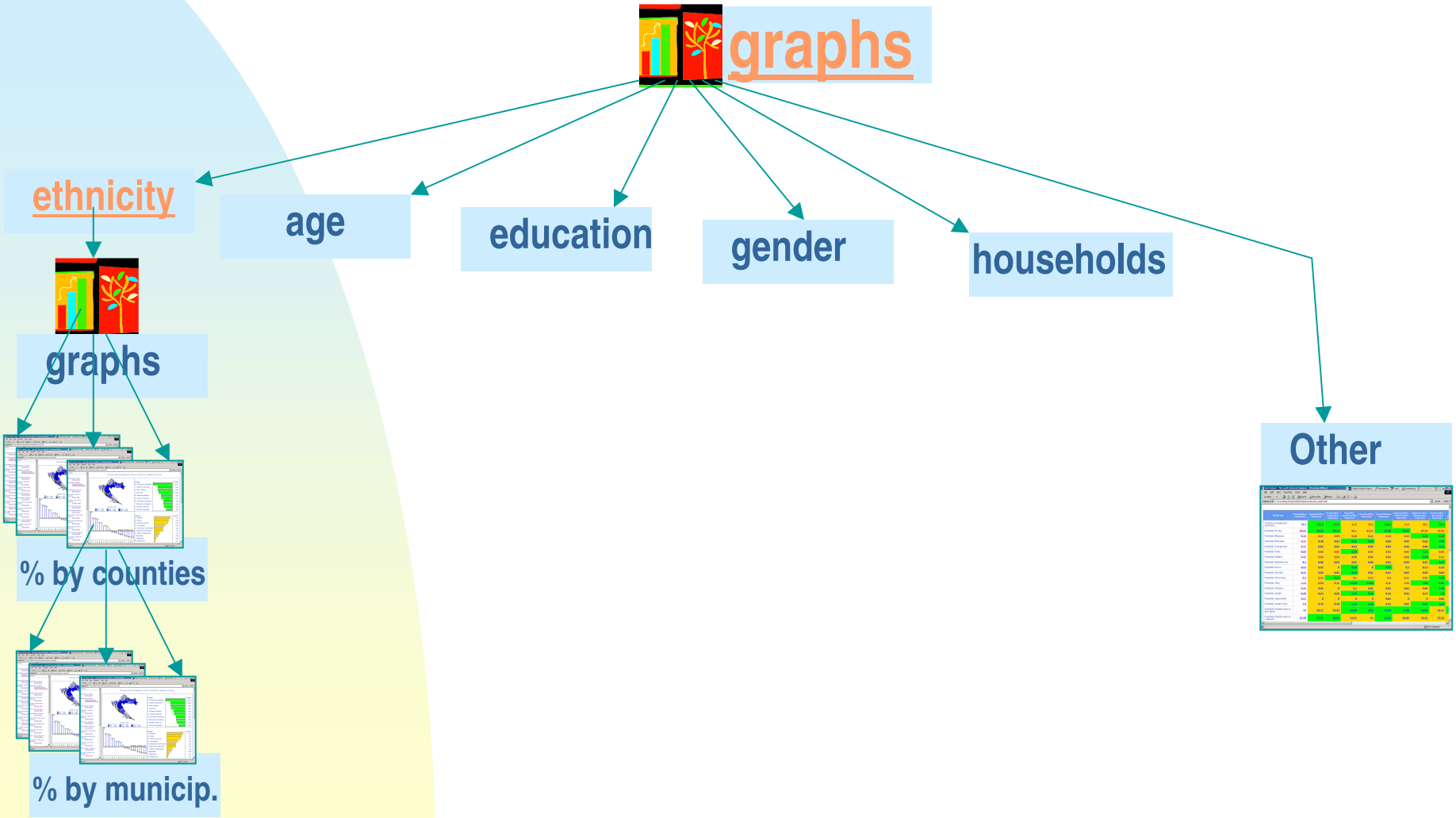
- Site map
- Ethnicity graphs and “drill-down”
- Population by education
- Main Table (“Other attributes”)
- Age pyramids
- Population density

Site map

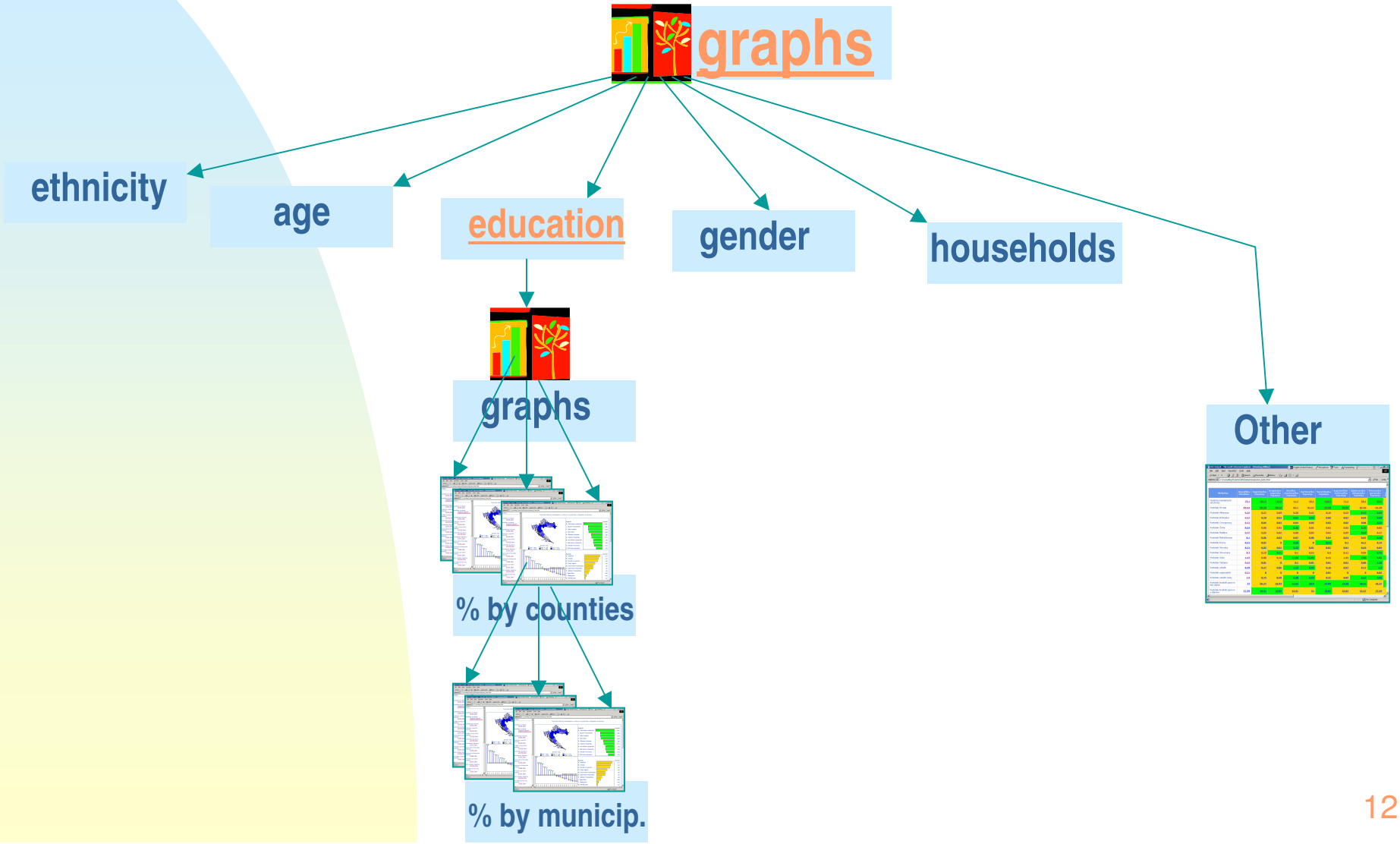
(http://www.dzs.hr/Eng/Census/census2001.htm)



DEMO: Ethnicity graphs



DEMO: Population by education



DEMO: Main Table ("Other")

graphs

ethnicity

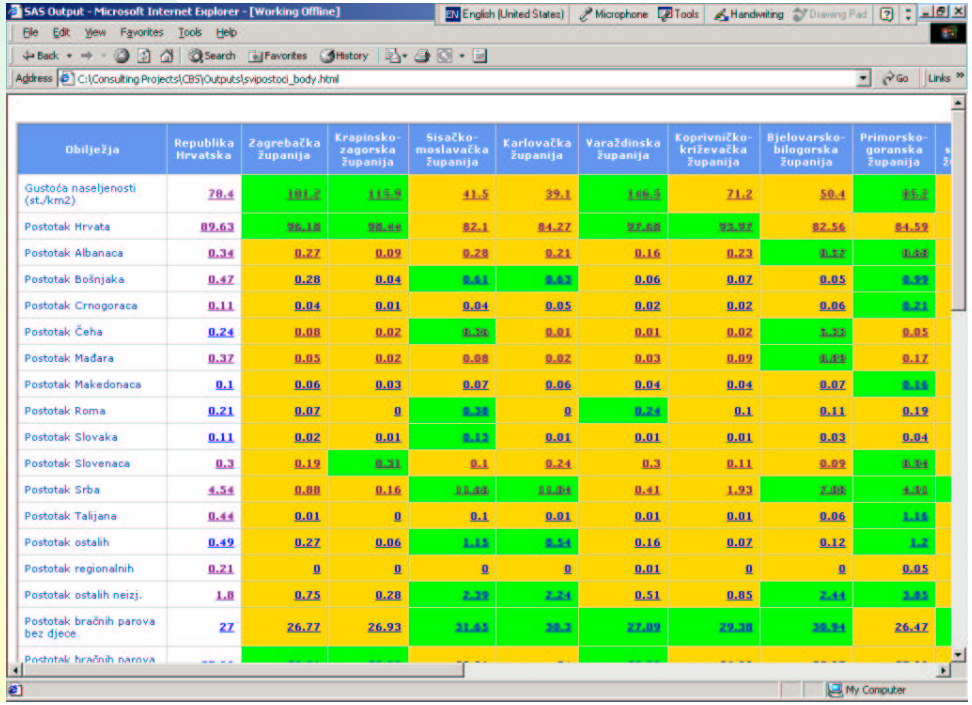
age

education

gender

households

Other



Obilježja	Republika Hrvatska	Zagrebačka županija	Krapinsko-zagorska županija	Sisačko-moslavačka županija	Karlovačka županija	Varaždinska županija	Koprivničko-križevačka županija	Bjelovarsko-bilogorska županija	Primorsko-goranska županija
Gustoća naseljenosti (st./km2)	78.4	101.2	115.9	41.5	39.1	106.9	71.2	50.4	85.2
Postotak Hrvata	89.63	96.18	98.64	82.1	84.27	97.68	95.97	82.56	84.59
Postotak Albanaca	0.34	0.27	0.09	0.28	0.21	0.16	0.23	0.32	0.68
Postotak Bošnjaka	0.47	0.28	0.04	0.41	0.42	0.06	0.07	0.05	0.89
Postotak Crnogoraca	0.11	0.04	0.01	0.04	0.05	0.02	0.02	0.06	0.21
Postotak Čeha	0.24	0.08	0.02	0.36	0.01	0.01	0.02	1.33	0.05
Postotak Mađara	0.37	0.05	0.02	0.08	0.02	0.03	0.09	0.89	0.17
Postotak Makedonaca	0.1	0.06	0.03	0.07	0.06	0.04	0.04	0.07	0.16
Postotak Roma	0.21	0.07	0	0.38	0	0.24	0.1	0.11	0.19
Postotak Slovaka	0.11	0.02	0.01	0.13	0.01	0.01	0.01	0.03	0.04
Postotak Slovenaca	0.3	0.19	0.21	0.1	0.24	0.3	0.11	0.09	0.36
Postotak Srba	4.54	0.88	0.16	10.56	10.06	0.41	1.93	7.08	4.31
Postotak Talijana	0.44	0.01	0	0.1	0.01	0.01	0.01	0.06	1.16
Postotak ostalih	0.49	0.27	0.06	1.15	0.54	0.16	0.07	0.12	1.2
Postotak regionalnih	0.21	0	0	0	0	0.01	0	0	0.05
Postotak ostalih neizj.	1.8	0.75	0.28	2.29	2.24	0.51	0.85	2.44	3.85
Postotak bračnih parova bez djece	27	26.77	26.93	31.45	28.3	27.89	29.38	28.94	26.47
Postotak bračnih parova									

DEMO: Age Pyramids

graphs

ethnicity

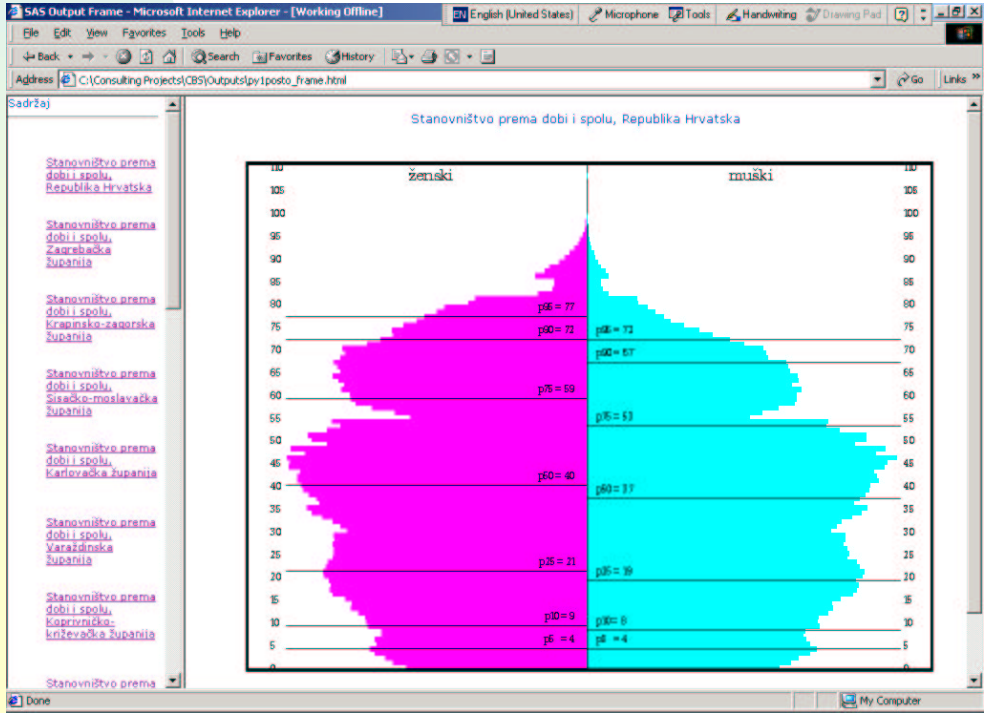
age

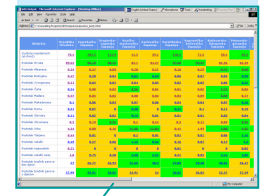
education

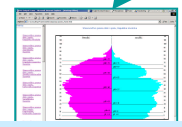
gender

households

Other







age pyr.

DEMO: Population Density

graphs

ethnicity

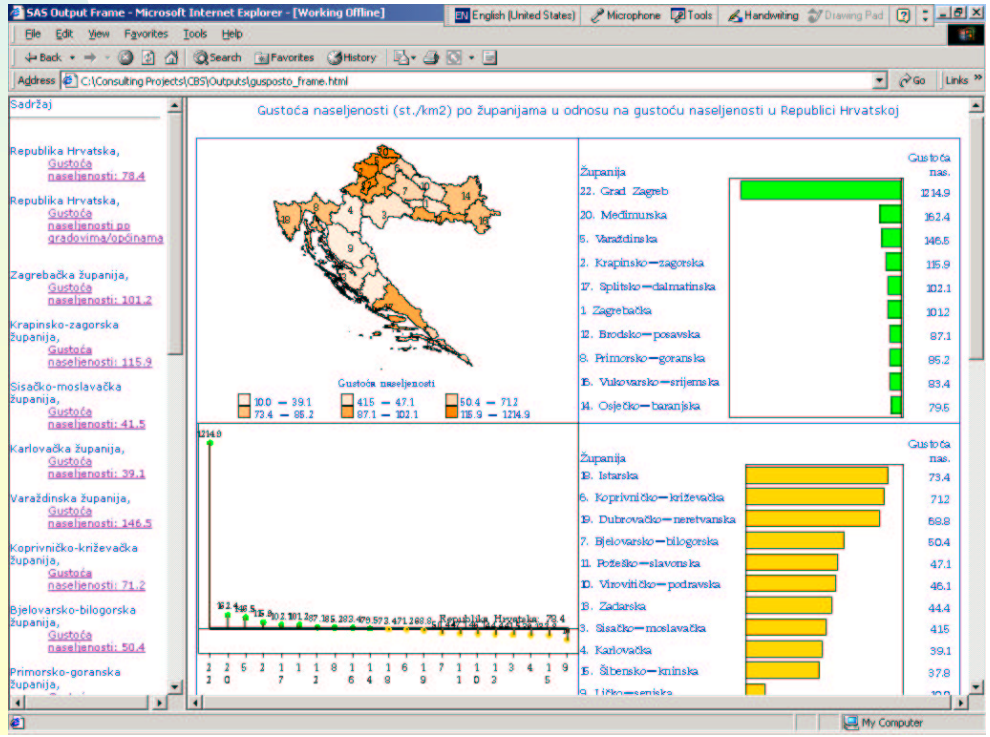
age

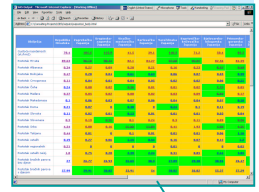
education

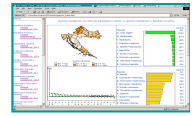
gender

households

Other







density

Conclusions

- **Aims** were accomplished due to:
  - SAS/ ODS flexibility in creating HTML linked files, tables, graphs
  - CBS staff expertise, collaboration with CAIR Research Center (http://www.cair-center.hr)
  - AA/ GIS data made available with the cooperation of Croatian State Geodetic Administration

Conclusions

- **Limitations:**
  - Pilot project (time & budget constraints)
  - 4 demographic tables only (more later)
  - Graph types limited to maps, bar/pie/"pin" charts, pyramids (customer key needs)
  - Dimensionality (1-2 variables at the time)
  - GIF graphics files used only (because Java, Activex were too large and slow)
  - Lowest administrative unit was municipality
  - Zagreb town "quarters" AA/GIS data not available at development time

Conclusions

- **Future developments:**
  - English version
  - Additional tables and attributes (e.g., financial/economic)
  - Multiple variable analyses/presentations
  - “drill-down” to the lower level administrative units (settlements)
  - Zagreb town quarters AA/GIS data
  - Fully functional street-level SAS/GIS?